This Page Is Inserted by IFW Operations and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Image Problem Mailbox.



SEQUENCE LISTING

Kalman, Lisa

Reichert, Fred

Sigua, Chris

Myers, Thomas

<120> THERMOSTABLE DNA PLOYMERASES INCORPORATING NUCLEOTIDE TRIPHOSPHATES LABELED WITH FLUORESCEIN FAMILY DYES

<130> 1803-329-999

<160> 18

<170> PatentIn version 3.0

RECEIVED

MAR 1 2 2002

Technology Center 2100

<210> 1

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence from mutant thermostable DNA polymerase

<220>

<221> VARIANT

<222> (3)..(3)

<223> Xaa at position 3 is any amino acid

<220>

<221> VARIANT

<222> (4)..(4)

<223> Xaa at position 4 is any amino acid except glutamic acid residue

```
<220>
<221>
      VARIANT
      (6)..(6)
<222>
<223> Xaa at position 6 is any amino acid
<220>
<221>
      VARIANT
      (7)..(7)
<222>
<223> Xaa at position 7 is Val or Ile
<220>
<221>
      VARIANT
      (9)..(9)
<222>
<223> Xaa at position 9 is any amino acid
<220>
<221>
      VARIANT
<222>
       (10)..(10)
<223> Xaa at position 10 is any amino acid
<400> 1
Leu Ser Xaa Xaa Leu Xaa Xaa Pro Xaa Xaa Glu
<210> 2
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
```

<221> VARIANT

```
(3)..(3)
<222>
<223> Xaa at position 3 is Gln or Gly
<220>
<221>
      VARIANT
      (4)..(4)
<222>
<223> Xaa at position 4 is any amino acid
<220>
<221>
      VARIANT
<222>
       (6)..(6)
<223> Xaa at position 6 is Ser or Ala
<400> 2
Leu Ser Xaa Xaa Leu Xaa Ile Pro Tyr Glu Glu
                5
1
                                    10
<210> 3
<211>
      11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:
                                           Sequence from mutant
thermostable DNA polymerase
<220>
<221>
      VARIANT
      (4)..(4)
<222>
<223> Xaa at position 4 is any amino acid
<400> 3
Leu Ser Gln Xaa Leu Ala Ile Pro Tyr Glu Glu
                5
                                    10
<210> 4
<211>
      11
<212> PRT
```

```
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221> VARIANT
<222> (7)..(7)
<223> Xaa at position 7 is Val or Ile
<400> 4
Leu Ser Val Xaa Leu Gly Xaa Pro Val Lys Glu
                                    10
<210> 5
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid
<400> 5
Leu Ser Val Xaa Leu Gly Val Pro Val Lys Glu
<210> 6
<211> 11
```

```
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid
<400> 6
Leu Ser Val Xaa Leu Gly Ile Pro Val Lys Glu
<210> 7
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from thermostable DNA
polymerase
<220>
<221> VARIANT
<222> (3)..(3)
<223> Xaa at position 3 is any amino acid
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except a glutamic acid residue
<220>
<221> VARIANT
      (6)..(6)
<222>
<223> Xaa at position 6 is any amino acid
```

```
<220>
<221>
       VARIANT
       (7)..(7)
<222>
<223> Xaa at position 7 is Val or Ile
<220>
<221>
      VARIANT
       (9)..(9)
<222>
<223> Xaa at position 9 is any amino acid
<220>
<221>
       VARIANT
<222>
      (10)..(10)
<223> Xaa at position 10 is any amino acid
<400> 7
Leu Ser Xaa Xaa Leu Xaa Xaa Pro Xaa Xaa Glu
                                    10
<210> 8
<211>
       11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from thermostable DNA
polymerase
<220>
<221> VARIANT
<222> (2)..(2)
<223> Xaa at position 2 is any amino acid
<220>
<221> VARIANT
<222> (3)..(3)
```

```
<223> Xaa at position .3 is any amino acid
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221> VARIANT
<222> (5)..(5)
<223> Xaa at position 5 is any amino acid
<220>
<221>
     VARIANT
<222> (6)..(6)
<223> Xaa at position 6 is any amino acid
<220>
<221> VARIANT
<222> (7)..(7)
<223> Xaa at position 7 is any amino acid
<220>
<221> VARIANT
      (8)..(8)
<222>
<223> Xaa at position 8 is any amino acid
<220>
<221>
      VARIANT
<222> (9)..(9)
```

<223> Xaa at position 9 is any amino acid

```
<220>
<221> VARIANT
<222> (10)..(10)
<223> Xaa at position 10 is any amino acid
<400> 8
Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu
                                   10
<210> 9
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Critical motif from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (2)..(2)
<223> Xaa at position 2 is Ser or Ala
<220>
<221> VARIANT
<222> (3)..(3)
<223> Xaa at position 3 is any amino acid
<220>
<221>
      VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221>
      VARIANT
```

<222>

(5)..(5)

```
<223> Xaa at position 5 is Leu or Ile
```

```
<220>
```

- <221> VARIANT
- <222> (6)..(6)
- <223> Xaa at position 6 is any amino acid
- <220>
- <221> VARIANT
- <222> (7)..(7)
- <223> Xaa at position 7 is any amino acid
- <220>
- <221> VARIANT
- <222> (8)..(8)
- <223> Xaa at position 8 is any amino acid
- <220>
- <221> VARIANT
- <222> (9)..(9)
- <223> Xaa at position 9 is any amino acid
- <220>
- <221> VARIANT
- <222> (10)..(10)
- <223> Xaa at position 10 is any amino acid
- <400> 9
- Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu 1 5 10
- <210> 10
- <211> 11
- <212> PRT

```
<213> Artificial Sequence :
<220>
<223> Description of Artificial Sequence: Critical motif from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (3)..(3)
<223> Xaa at position 3 is any amino acid
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221> VARIANT
<222> (6)..(6)
<223> Xaa at position 6 is any amino acid
<220>
<221> VARIANT
      (7)..(7)
<222>
<223> Xaa at position 7 is any amino acid
<220>
<221> VARIANT
<222>
      (8)..(8)
<223> Xaa at position 8 is any amino acid
<220>
<221>
      VARIANT
      (9)..(9)
<222>
<223> Xaa at position 9 is any amino acid
```

```
<220>
<221>
      VARIANT
     (10)..(10)
<222>
<223> Xaa at position 10 is any amino acid
<400> 10
Leu Ser Xaa Xaa Leu Xaa Xaa Xaa Xaa Glu
                                   10
<210> 11
<211> 30
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Primer DG48
<400> 11
gggaagggcg atcggtgcgg gcctcttcgc
                                                                     30
<210> 12
<211> 15
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant thermostable
DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid
<220>
<221> VARIANT
<222> (5)..(5)
<223> Xaa at position 5 is any amino acid
```

```
<220>
<221>
      VARIANT
      (7)..(7)
<222>
<223> Xaa at position 7 is any amino acid
<220>
<221>
      VARIANT
      (8)..(8)
<222>
<223> Xaa at position 8 is any amino acid
<220>
<221>
     VARIANT
      (11)..(11)
<222>
<223> Xaa at position 11 is any amino acid
<220>
<221>
      VARIANT
<222>
      (12)..(12)
<223> Xaa at position 12 is any amino acid
<220>
<221> VARIANT
      (13)..(13)
<222>
<223> Xaa at position 13 is any amino acid
<400> 12
Met Arg Arg Xaa Xaa Lys Xaa Xaa Asn Tyr Xaa Xaa Xaa Tyr Gly
                                                        15
                                    10
<210> 13
<211>
     11
<212> PRT
<213> Artificial Sequence
```

<220>

```
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
      (3)..(3)
<222>
<223> Xaa at position 3 is any amino acid except Gln or Gly
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221> VARIANT
      (6)..(6)
<222>
<223> Xaa at position 6 is Ser or Ala
<400> 13
Leu Ser Xaa Xaa Leu Xaa Ile Pro Tyr Glu Glu
                                    10
<210> 14
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
```

```
Leu Ser Gln Xaa Leu Ala Ile Pro Tyr Glu Glu
                                    10
1
<210> 15
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
      VARIANT
<221>
<222>
      (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221>
      VARIANT
      (7)..(7)
<222>
<223> Xaa at position 7 is Val or Ile
<400> 15
Leu Ser Val Xaa Leu Gly Xaa Pro Val Lys Glu
                                    10
<210> 16
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
```

```
<400> 16
Leu Ser Val Xaa Leu Gly Val Pro Val Lys Glu
<210> 17
<211>
      11
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221>
      VARIANT
      (4)..(4)
<222>
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<400> 17
Leu Ser Val Xaa Leu Gly Ile Pro Val Lys Glu
                                    10
<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Sequence from mutant
thermostable DNA polymerase
<220>
<221> VARIANT
<222> (4)..(4)
<223> Xaa at position 4 is any amino acid except glutamic acid residue
<220>
<221> VARIANT
      (7)..(7)
<222>
<223> Xaa at position 7 is Val or Ile
```

<400> 18

Ser Gln Ile Xaa Leu Arg Xaa 1 5

)